

# LONDON- WEST MIDLANDS ENVIRONMENTAL STATEMENT

## Volume 5 | Technical Appendices

CFA21 | Drayton Bassett, Hints and Weeford

**Data appendix (AQ-001-021)**

Air quality

November 2013

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Department  
for Transport

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# Appendix AQ-001-021

Environmental topic:	Air quality	AQ
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# 1 Introduction

1.1.1 The air quality appendices for the Drayton Bassett, Hints and Weeford community forum area (CFA21) comprise:

- discussion of the policy framework (Section 2);
- baseline air quality data (Section 3);
- dust impact evaluation and risk rating (Section 4); and
- air quality assessment – road traffic (Section 5).

1.1.2 Maps referred to throughout the air quality appendix are contained in the Volume 5 air quality map book.

## 2 Policy framework

- 2.1.1.1 Staffordshire County Council's (SCC) Local Transport Plan (2011)<sup>1</sup> outlines a number of initiatives that are aimed at reducing emissions from road transport, including the promotion of alternatives to private motor vehicles (Policy 5.1) and the promotion of low-emitting vehicles and vehicle efficiency (Policy 5.2).
- 2.1.1.2 The local planning authority for the Drayton Bassett, Hints and Weeford area, is Lichfield District Council (LDC) and the relevant adopted local plan for the Drayton Bassett, Hints and Weeford area is the Lichfield District Local Plan 1998<sup>2</sup>.
- 2.1.1.3 The Lichfield District Local Plan sets out the Council's policies and proposals for development and land use.
- 2.1.1.4 Policy DC.1 of the Lichfield District Local Plan: Amenity and Design Principles for Development, states that all new development "should not cause loss of amenity to adjacent properties or the neighbourhood through dust, fumes or other disturbance". "Traffic resulting from the development should not result in problems or increases in existing problems of congestion on the local road network"<sup>3</sup>.
- 2.1.1.5 The Lichfield District Local Plan will ultimately be replaced by a new local plan. However, many of the policies currently contained within the Lichfield District Local Plan, including Policy DC.1, have been saved and will therefore remain in force until they are replaced by the emerging local plan.
- 2.1.1.6 A new proposed submission of the local plan was published by LDC in July 2012 and submitted to Government Office in March 2013<sup>4</sup>.
- 2.1.1.7 A number of policies in the proposed submission of the local plan make reference to air quality. Core Policy 3: Delivering Sustainable Development highlights several issues that all new development should address in order to deliver sustainable development. Of particular relevance to air quality, the policy states that all development should protect the amenity of local residents, and reduce levels of pollution or contamination to air, land, soil or water.
- 2.1.1.8 Core Policy 5: Sustainable Transport contains a commitment to reduce the impact of travel on the environment and improve air quality. Core Policy 10: Healthy and Safe Lifestyles, states that that LDC will ensure that "the current high standard of air quality in the District is monitored and maintained and, where possible, improved with no decline in standards being deemed acceptable as a result of new development"<sup>5</sup>.

<sup>1</sup> Staffordshire County Council (2011), *Staffordshire Local Transport Plan 2011 – Strategy Plan*.

<sup>2</sup> Lichfield District Council (1998), *Lichfield District Local Plan* (adopted June 1998).

<sup>3</sup> Lichfield District Council (1998), *Lichfield District Local Plan* (adopted June 1998). p. 120.

<sup>4</sup> Lichfield District Council (2012), *Lichfield District Local Plan, Our Strategy – Proposed Submission July 2012*.

<sup>5</sup> Lichfield District Council (2012), *Lichfield District Local Plan, Our Strategy – Proposed Submission July 2012*. p. 67.

## 3 Baseline air quality data

### 3.1 Existing air quality

#### Local authority review and assessment information

- 3.1.1 Under Part IV of the Environment Act 1995<sup>6</sup>, all local authorities are responsible for local air quality management (LAQM). Under the LAQM regime, a local authority is required to undertake regular review and assessment of local air quality, the findings of which are reviewed by the Department for Environment, Food and Rural Affairs (Defra) prior to publication.
- 3.1.2 If an area is identified as being unlikely to achieve an air quality standard and there are sensitive receptors to be exposed over the relevant exposure period, then the local authority is required to designate an AQMA and develop an AQAP to improve local air quality.
- 3.1.3 LDC has designated an AQMA at Muckley Corner which includes a roundabout on the A5 and some of the surrounding properties. The AQMA is not within the Drayton Bassett, Hints and Weeford area.

#### Local air quality monitoring data

- 3.1.4 Monitoring sites within the Drayton Bassett, Hints and Weeford area that are considered relevant for this assessment are shown in Volume 5: Map AQ-01-021. The following sections provide a summary of the recorded pollutant concentrations at these sites.
- 3.1.5 The pollutant concentrations can be compared to the air quality standards:
- 40µg/m<sup>3</sup> as an annual mean for NO<sub>2</sub> and PM<sub>10</sub>;
  - 200µg/m<sup>3</sup> one-hour mean for NO<sub>2</sub> not to be exceeded more than 18 times a year (equivalent to the 99.8th percentile of the one-hour mean);
  - 50µg/m<sup>3</sup> 24-hour mean for PM<sub>10</sub> not to be exceeded more than 35 times a year (equivalent to the 90.4<sup>th</sup> percentile of the 24-hour mean); and
  - 25µg/m<sup>3</sup> as an annual mean for PM<sub>2.5</sub>.

#### Continuous monitoring

- 3.1.6 There are currently no continuous monitoring locations in operation within the Drayton Bassett, Hints and Weeford area.

#### Diffusion tubes

- 3.1.7 This section summarises the results from the diffusion tube sites that are considered relevant for the assessment of air quality in the in Drayton Bassett, Hints and Weeford area.
- 3.1.8 Five diffusion tube monitoring sites are located within the Drayton Bassett, Hints and Weeford area (see Volume 5: Map AQ-01-021): all are roadside to the A38. Four sites

<sup>6</sup> *Environment Act 1995* (c.25). London, Her Majesty's Stationery Office.



are near Canwell, approximately 2.2km west of the centre line of the Proposed Scheme and one site is located close to Swinfen Hall to the south of Lichfield, approximately 1.8km west of the centre line of the Proposed Scheme. These locations are not considered to be representative of background air quality conditions in the mostly rural setting of the Proposed Scheme in the Drayton Bassett, Hints and Weeford area. However, they may be more indicative of concentrations in the vicinity of where the Proposed Scheme passes the junction of the A38 and A453 and junction of the A453 and A5 near Hints.

- 3.1.9 Annual mean NO<sub>2</sub> diffusion tube measurements for the period 2008 to 2012 are presented below in Table 1. Concentrations at three of five A38 roadside sites exceed the annual mean NO<sub>2</sub> air quality standard. These three sites are at roadside locations on the A38 where the M6 Toll is parallel to the A38. At locations where the A38 is the only major road source annual mean NO<sub>2</sub> concentrations are below the relevant air quality standard. There is no clear increasing or decreasing trend over the 2008-2012 period.

Table 1: Annual mean NO<sub>2</sub> concentrations recorded at diffusion tube monitoring sites<sup>7</sup>

Site	Coordinates	Annual mean NO <sub>2</sub> concentrations (µg/m <sup>3</sup> )				
		2008	2009	2010	2011	2012
A38-5A Canwell (roadside)	413950, 300574	Closed	Closed	44	40	42
A38-6A Canwell (roadside)	413961, 300539	Closed	Closed	33	34	33
A38-4A/B Canwell (roadside)	413978, 300834	56	41	45	42	50
A38-4/4 (1) Canwell (roadside)	413981, 300888	49	47	50	49	50
A38-3 Swinfen Hall, Lichfield (roadside)	412891, 306817	37	28	39	34	33

### Background pollutant concentrations

- 3.1.10 Estimates of background air quality have been obtained from Defra for 2011 and future years (2017 and 2026)<sup>8</sup>. These data are estimated for 1km grid squares for nitrogen oxides (NO<sub>x</sub>), NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>. NO<sub>2</sub> annual mean concentrations ranged from 16µg/m<sup>3</sup> to 17µg/m<sup>3</sup> in 2012, PM<sub>10</sub> annual mean concentrations ranging from 15µg/m<sup>3</sup> to 17µg/m<sup>3</sup> in 2012 and PM<sub>2.5</sub> concentrations ranged from 10µg/m<sup>3</sup> to 11µg/m<sup>3</sup> in 2012. Average background pollutant concentrations are less than the relevant air quality standards.
- 3.1.11 While the diffusion tube sites can be used to indicate trends in concentrations they are not considered to be representative of the predominantly rural area through which the Proposed Scheme will pass, although the diffusion tubes adjacent the A38 would be representative of concentrations in the vicinity of where the Proposed Scheme passes the junction of the A38 and A453 and junction of the A453 and A5 near Hints. The background air quality maps produced by Defra have been used to characterise the baseline air quality conditions along the Proposed Scheme in the Drayton Bassett, Hints and Weeford area. These maps indicate that the average background pollutant

<sup>7</sup> Data Source: Lichfield District Council (2013), *2013 Air Quality Progress Report: Lichfield District Council*, June 2013. Notes for Table 1: Air quality standard for NO<sub>2</sub> is 40µg/m<sup>3</sup> expressed as an annual mean. Closed indicates site was not operational in that year.

<sup>8</sup> Defra; Background Maps; <http://laqm.defra.gov.uk/review-and-assessment/tools/background-maps.html>; Accessed: July 2013.

concentrations across the Drayton Bassett, Hints and Weeford area are below the relevant air quality standards.

### Local emission sources

- 3.1.12 The main source of emissions of NO<sub>x</sub> and PM<sub>10</sub> in the Drayton Bassett, Hints and Weeford area are road traffic emission from the A5, the A38 and the M6 Toll<sup>9</sup>, which are within the Drayton Bassett, Hints and Weeford area. There is a number of permitted Part A industrial processes<sup>10</sup>. These are quarrying at Weeford, approximately 1.1km west of the centre line of the Proposed Scheme; quarrying near Hopwas, approximately 1.2km east of the centre line of the Proposed Scheme; and a landfill operation near Hopwas, approximately 1.2km east of the centre line of the Proposed Scheme. Due to the nature of the emissions from these Part A processes, it is unlikely that these will have an effect on local air quality within the Drayton Bassett, Hints and Weeford area. Contributions to local pollutant concentrations made by these industrial installations are included within background concentrations used in the assessment

## 3.2 Receptors

### Human

- 3.2.1 Human receptors which are considered to be susceptible to changes in air quality due to construction or operation of the proposed scheme have been identified.

#### *Construction phase*

- 3.2.2 Human receptors that could potentially be affected by the construction phase of the Proposed Scheme are shown in Volume 5: Map AQ-02-021-01, Map AQ-02-021-02 and Map AQ-02-021-03, for receptors relevant to the construction dust assessment and Volume 5: Map AQ-01-021 for receptors relevant to the construction traffic emissions assessment. These are:

- properties along Drayton Lane, Drayton Bassett;
- Draytonlane End Farm, A453 Sutton Road, Tamworth;
- properties along Rock Hill near the A5 Watling Street, Weeford;
- properties along Flats Lane, Lichfield;
- Packington Moor Farm on Jerry's Lane, Lichfield;
- Horsley Brook Farm, off the A51 Tamworth Road; and
- properties along A51 Tamworth Road, Lichfield.

#### *Operational phase*

- 3.2.3 Human receptors that could potentially be affected by the operation of the Proposed Scheme are shown in Volume 5: Map AQ-01-021. These are:

<sup>9</sup> Lichfield District Council (2013), *2013 Air Quality Progress Report: Lichfield District Council*, June 2013.

<sup>10</sup> Identified from Environment Agency; What's in your backyard website; <http://www.environment-agency.gov.uk/default.aspx>; Accessed July 2013. A Part A process is an industrial operation requiring a permit to operate from the Environment Agency under the Environmental Permitting regime, and as such is considered a significant source of pollution.

- properties along Flats Lane, Lichfield.

## Ecological

### *Construction phase*

- 3.2.4 No ecological receptors with a statutory designation that could potentially be affected by the construction of the Proposed Scheme have been identified within the Drayton Bassett, Hints and Weeford area. There is one non-statutory designated site within the Drayton Bassett, Hints and Weeford area that could potentially be affected by changes in air quality as a result of the Proposed Scheme during the construction phase. This site is Rookery Site of Biological Importance (SBI). This site has been identified based on potential sensitivity to dust deposition.

### *Operational phase*

- 3.2.5 No ecological receptors with a statutory designation or non-statutory designation that could potentially be affected by the operation of the Proposed Scheme have been identified within the Drayton Bassett, Hints and Weeford area.

## 4 Dust impact evaluation and risk rating

- 4.1.1 The following tables provide details of the assessment of construction impacts following the Institute of Air Quality Management guidance<sup>11</sup>. Where considered useful to identify receptors and their relationship to the construction activity, a specific figure is provided.
- 4.1.2 The construction activities considered were demolition; the construction of new structures; earthworks, including the movement of materials on the haul road along the line of the Proposed Scheme; and dust and mud deposited onto public highways from vehicles travelling to and from construction areas (referred to as trackout in the IAQM guidance).

Table 2: Evaluation and risk rating of construction activities

Activity	Distance to nearest Receptor	Dust emission class	Dust risk category	Sensitivity of surrounding area	Magnitude of impact (with CoCP mitigation measures)	Principal justifications
<b>Properties along Drayton Lane, Drayton Bassett (Volume 5: Map-AQ-02-021-01 Figure 21.1)</b>						
Demolition	n/a	n/a	n/a	n/a	n/a	No demolition within 350m
Earthworks	50m-100m	Large	Medium	Low	Negligible	Properties more than 20m from earthworks and over 100m from haul road Total area of earthworks greater than 10,000m <sup>2</sup> More than 10 heavy earth moving vehicles on haul road Baseline PM <sub>10</sub> concentrations less than 75% of air quality standard Duration of earthworks expected to be more than 12 months
Construction	50m-100m	Large	Medium	Low	Negligible	Properties more than 20m from construction Total volume of construction greater than 100,000m <sup>3</sup> Baseline PM <sub>10</sub> concentrations less than 75% of air quality standard Duration of construction expected to be more than 12months

<sup>11</sup> IAQM (2012), *Guidance on the assessment of the impacts of construction on air quality and the determination of their significance*.

## Appendix AQ-001-021 | Dust impact evaluation and risk rating

Activity	Distance to nearest Receptor	Dust emission class	Dust risk category	Sensitivity of surrounding area	Magnitude of impact (with CoCP mitigation measures)	Principal justifications
Trackout	Less than 20m	Medium	Medium	High	Negligible	Properties 14m from trackout 25-100 HDV trips in any one day Baseline PM10 concentrations less than 75% of air quality standard Duration of trackout expected to be more than 12 months
<b>Draytonlane End Farm, A453 Sutton Road, Tamworth (Volume 5: Map-AQ-02-021-01 Figure 21.2)</b>						
Demolition	100m-200m	Large	Medium	Low	Negligible	Property more than 100m from demolition Total volume of demolition greater than 50,000m <sup>3</sup> , Baseline PM10 concentrations less than 75% of air quality standard Duration of demolition expected to be more than 12 months
Earthworks	50m-100m	Large	Medium	Low	Negligible	Property more than 20m from earthworks and over 100m from haul road Total area of earthworks greater than 10,000m <sup>2</sup> More than 10 heavy earth moving vehicles on haul road Baseline PM10 concentrations less than 75% of air quality standard Duration of earthworks expected to be more than 12 months
Construction	Less than 20m	Large	High	High	Slight adverse	Properties 14m from construction Total volume of construction greater than 100,000m <sup>3</sup> Baseline PM10 concentrations less than 75% of air quality standard Duration of construction expected to be more than 12 months
Trackout	Less than 20m	Large	High	High	Slight adverse	Properties 14m from trackout route Over 100 HDV trips in any one day Baseline PM10 concentrations less than 75% of air quality standard Duration of trackout expected to be more than 12 months

Activity	Distance to nearest Receptor	Dust emission class	Dust risk category	Sensitivity of surrounding area	Magnitude of impact (with CoCP mitigation measures)	Principal justifications
<b>Properties along the Rock Hill near A5 Watling Street, Weeford (Volume 5: Map AQ-02-021-01 Figure 21.3 and Figure 21.4)</b>						
Demolition	100m-200m	Large	Medium	Low	Negligible	<p>Properties more than 100m from demolition</p> <p>Total volume of demolition greater than 50,000m<sup>3</sup></p> <p>Baseline PM10 concentrations less than 75% of air quality standard</p> <p>Duration of demolition expected to be more than 12 months</p>
Earthworks	20m-50m	Large	High	Low	Negligible	<p>Properties more than 20m from earthworks and over 100m from haul road</p> <p>Total area of earthworks greater than 10,000m<sup>2</sup></p> <p>More than 10 heavy earth moving vehicles on haul road</p> <p>Baseline PM10 concentrations less than 75% of air quality standard</p> <p>Duration of earthworks expected to be more than 12 months</p>
Construction	Less than 20m	Large	High	High	Slight adverse	<p>Properties 19m from construction.</p> <p>Total volume of construction greater than 100,000m<sup>3</sup></p> <p>Baseline PM10 concentrations less than 75% of air quality standard</p> <p>Duration of construction expected to be more than 12 months</p>
Trackout	Less than 20m	Large	High	High	Slight adverse	<p>Properties 10m from trackout route</p> <p>Over 100 HDV trips in any one day</p> <p>Baseline PM10 concentrations less than 75% of air quality standard</p> <p>Duration of trackout expected to be more than 12 months</p>

## Appendix AQ-001-021 | Dust impact evaluation and risk rating

Activity	Distance to nearest Receptor	Dust emission class	Dust risk category	Sensitivity of surrounding area	Magnitude of impact (with CoCP mitigation measures)	Principal justifications
<b>Properties along Flats Lane, Lichfield (Volume 5: Map AQ-02-021-02 Figure 21.5 and Figure 21.6)</b>						
Demolition	200m-350m	Large	Low	Low	Negligible	<p>Properties more than 200m from demolition (demolitions are over 200m to the north of properties and not shown in map views)</p> <p>Total volume of demolition greater than 50,000m<sup>3</sup></p> <p>Baseline PM<sub>10</sub> concentrations less than 75% of air quality standard</p> <p>Duration of demolition expected to be more than 12 months</p>
Earthworks	200m-350m	Large	Low	Low	Negligible	<p>Properties more than 20m from earthworks and over 300m from haul road</p> <p>Total area of earthworks greater than 10,000m<sup>2</sup></p> <p>More than 10 heavy earth moving vehicles on haul road</p> <p>Baseline PM<sub>10</sub> concentrations less than 75% of air quality standard</p> <p>Duration of earthworks expected to be more than 12 months</p>
Construction	200m-350m	Large	Low	Low	Negligible	<p>Properties more than 20m from construction</p> <p>Total volume of construction greater than 100,000m<sup>3</sup></p> <p>Baseline PM<sub>10</sub> concentrations less than 75% of air quality standard</p> <p>Duration of construction expected to be more than 12 months</p>
Trackout	Less than 20m	Medium	Medium	High	Negligible	<p>Properties 19m from trackout route</p> <p>25-100 HDV trips in any one day</p> <p>Baseline PM<sub>10</sub> concentrations less than 75% of air quality standard</p> <p>Duration of trackout expected to be more than 12 months</p>

Activity	Distance to nearest Receptor	Dust emission class	Dust risk category	Sensitivity of surrounding area	Magnitude of impact (with CoCP mitigation measures)	Principal justifications
<b>Packington Moor, Jerry's Lane, Lichfield (Volume 5: Map AQ-02-021-02 Figure 21.7)</b>						
Demolition	Less than 20m	Large	High	High	Slight adverse	Property 10m from demolition Total volume of demolition greater than 50,000m <sup>3</sup> Baseline PM10 concentrations less than 75% of air quality standard Duration of demolition expected to be more than 12 months
Earthworks	Less than 20m	Large	High	High	Slight adverse	Property 15m from earthworks and haul road Total area of earthworks greater than 10,000m <sup>2</sup> More than 10 heavy earth moving vehicles on haul road Baseline PM10 concentrations less than 75% of air quality standard Duration of earthworks expected to be more than 12 months
Construction	Less than 20m	Large	High	High	Slight adverse	Property 15m from construction Total volume of construction greater than 100,000m <sup>3</sup> Baseline PM10 concentrations less than 75% of air quality standard Duration of construction expected to be more than 12 months
Trackout	n/a	n/a	n/a	n/a	n/a	No trackout route within 100m
<b>Horsley Brook Farm off the A51 Tamworth Road, Lichfield (Volume 5: Map AQ-02-021-02 Figure 21.8)</b>						
Demolition	n/a	n/a	n/a	n/a	n/a	No demolition within 350m
Earthworks	100m-200m	Large	Medium	Low	Negligible	Properties more than 20m from earthworks and over 100m from haul road Total area of earthworks greater than 10,000m <sup>2</sup> More than 10 heavy earth moving vehicles on haul road Baseline PM10 concentrations less than 75% of air quality standard Duration of earthworks expected to be more than 12 months



Activity	Distance to nearest Receptor	Dust emission class	Dust risk category	Sensitivity of surrounding area	Magnitude of impact (with CoCP mitigation measures)	Principal justifications
Construction	100m-200m	Large	Medium	Low	Negligible	Properties more than 20m from construction Total volume of construction greater than 100,000m <sup>3</sup> Baseline PM10 concentrations less than 75% of air quality standard Duration of construction expected to be more than 12 months
Trackout	n/a	n/a	n/a	n/a	n/a	No trackout route within 100m
<b>Properties along the A51 Tamworth Road, Lichfield (Volume 5: Map AQ-02-021-03 Figure 21.9)</b>						
Demolition	100m-200m	Large	Medium	Low	Negligible	Properties more than 20m from demolition Total volume of demolition greater than 50,000m <sup>3</sup> Baseline PM10 concentrations less than 75% of air quality standard Duration of demolition expected to be more than 12 months
Earthworks	100m-200m	Large	Medium	Low	Negligible	Properties more than 20m from earthworks and over 100m from haul road Total area of earthworks greater than 10,000m <sup>2</sup> More than 10 heavy earth moving vehicles on haul road Baseline PM10 concentrations less than 75% of air quality standard Duration of earthworks expected to be more than 12 months
Construction	Less than 20m	Large	High	High	Slight adverse	Properties 15m from construction Total volume of construction greater than 100,000m <sup>3</sup> Baseline PM10 concentrations less than 75% of air quality standard Duration of construction expected to be more than 12 months

Activity	Distance to nearest Receptor	Dust emission class	Dust risk category	Sensitivity of surrounding area	Magnitude of impact (with CoCP mitigation measures)	Principal justifications
Trackout	Less than 20m	Medium	Medium	Low	Negligible	Properties 15m from trackout route 25-100 HDV (greater than 3.5 tonne) trips in any one day Baseline PM <sub>10</sub> concentrations less than 75% of air quality standard Duration of trackout expected to be more than 12 months
<b>Rookery SBI (Volume 5: Map AQ-02-021 Figure 21.8)</b>						
Demolition	n/a	n/a	n/a	n/a	n/a	No demolition within 350m
Earthworks	Less than 20m	Large	Medium	Medium	Negligible	Locally important ecological site Ecological receptor less than 20m from earthworks and haul road Total site area of earthworks greater than 10,000m <sup>2</sup> More than 10 heavy earth moving vehicles on haul road Baseline PM <sub>10</sub> concentrations less than 75% of objective Duration of earthworks expected more than 12 months
Construction	Less than 20m	Large	Medium	Medium	Negligible	Locally important ecological site Ecological receptor less than 20m from construction Total site area of earthworks greater than 100,000m <sup>3</sup> Baseline PM <sub>10</sub> concentrations less than 75% of objective Duration of earthworks expected more than 12 months
Trackout	n/a	n/a	n/a	n/a	n/a	No trackout route within 100m



Table 3: Summary of construction dust impacts and effects

Location	Magnitude of impact (with CoCP mitigation measures)	Effect of dust-generating activities	Additional mitigation
Properties along Drayton Lane, Drayton Bassett	Negligible	Not significant	None required
Drayton Lane End Farm, A453 Sutton Road, Tamworth	Slight adverse	Not significant	None required
Properties along Rock Hill, near A5 Watling Street, Weeford	Slight adverse	Not significant	None required
Properties along Flats Lane, Lichfield	Negligible	Not significant	None required
Packington Moor, Jerry's Lane, Lichfield	Slight adverse	Not significant	None required
Horsley Brook Farm off the A51 Tamworth Road, Lichfield	Negligible	Not significant	None required
Properties along Tamworth Road, Lichfield	Slight adverse	Not significant	None required
Rookery SBI	Negligible	Not significant	None required

## 5 Air quality assessment – road traffic

### 5.1 Overall assessment approach

- 5.1.1 The air quality assessment for road related emissions has used three different approaches based on the scale of changes in traffic and road alignment. Where the Design Manual for Roads and Bridges<sup>12</sup> (DMRB) thresholds detailed in the SMR (Volume 5 Appendix CT-001-000/1) will not be exceeded, any additional assessment is not required as the air quality impacts will be minimal. If these thresholds are breached, then an assessment has been carried out.
- 5.1.2 If it is considered unlikely that air quality standards will be exceeded and the road configuration is a simple one, then the DMRB screening method has been used to predict changes in air quality. Where there will be a risk of standards being exceeded, where the road layout is considered to be complex or where the use of the DMRB screening method has indicated that there will be a potential exceedance of air quality standards, then the atmospheric dispersion model ADMS-Roads has been used for the assessment. Professional judgment has been used to select the appropriate tool for each area.
- 5.1.3 In this study area the DMRB screening method was considered to be a suitable tool for the assessment as baseline air quality will be below air quality standards, there is a simple road layout and there are limited numbers of receptors close to roads affected during construction and operation of the Proposed Scheme.

### 5.2 Construction traffic model

- 5.2.1 Construction traffic data used in this assessment are detailed in Volume 5: Appendix TR-001-000. The construction scenario used traffic data from the year of maximum intensity of construction (2021) but assumed this would occur in the first year of construction (2017).
- 5.2.2 Screening using the DMRB traffic and road alignment change criteria was undertaken to determine locations requiring assessment. Four locations within the Drayton Bassett, Hints and Weeford area met the criteria for assessment of change in traffic emissions during the construction phase. These locations are: the A453 Sutton Road, Tamworth; Watling Street near the A5, Weeford; the A5 between the junction with the A38 and M6 Toll junction T5 and the A38 between A5 and A5148. There is a temporary road realignment of the A453 Sutton Road which required assessment at receptors around this road. At the other locations, the increase in construction traffic was sufficient to require assessment at receptors around these roads. No locations were identified as requiring assessment due to construction traffic movements on the haul road.

#### Receptors assessed

- 5.2.3 For locations where DMRB traffic and road alignment change criteria for local air quality were met, a number of receptors representative of worst-case exposure locations were selected for quantitative assessment. These included locations

<sup>12</sup> Highways Agency (2007), *The Design Manual for Roads and Bridges (Volume 11, Section 3, Part 1 Air Quality HA207/07)*.

representative of highest concentrations along the roads, including closest to junctions or to the road itself. Receptors assessed are listed in Table 4 and shown in Volume 5: Map AQ-01-021.

Table 4: Modelled receptors (construction phase)

Receptor	Description/Location	Ordnance Survey coordinates
21-1	Draytonlane End Farm, Sutton Road, Tamworth	416607,300640
21-2	The Lodge, Watling Street, Weeford, Lichfield	415101,303697
21-3	24 Watling Street, Weeford, Lichfield	414651,304001
21-4	22 Flats Lane, Lichfield (at the junction with Watling Street)	414355,304155

## Background concentrations

5.2.4 The background concentrations used in the assessment are shown in Table 5 taken from the Defra Maps.

Table 5: Background 2017 concentrations at assessed receptors

Receptor (or zone of receptors)	Concentrations ( $\mu\text{g}/\text{m}^3$ )		
	NO <sub>x</sub>	NO <sub>2</sub>	PM <sub>10</sub>
21-1 (Draytonlane End Farm)	18.4	13.1	15.1
21-2 (The Lodge)	18.0	12.9	15.5
21-3 (24 Watling Street)	18.9	13.5	16.0
21-4 (22 Flats Lane)	18.9	13.5	16.0

## DMRB model results

5.2.5 This section provides the summary of the modelled pollutant concentrations for the assessed receptors. The magnitude of change and impact descriptor are also derived following the Environmental Protection UK (EPUK) methodology<sup>13</sup>.

Table 6: Summary of DMRB annual mean NO<sub>2</sub> results (construction phase)

Receptor	Concentrations ( $\mu\text{g}/\text{m}^3$ )			Change in concentrations ( $\mu\text{g}/\text{m}^3$ )	Magnitude of change	Impact descriptor
	2012 baseline	2017 without Proposed Scheme	2017 with Proposed Scheme			
21-1 (Draytonlane End Farm)	22.0	18.3	16.7	-1.6	Small decrease	Negligible
21-2 (The Lodge)	16.9	13.6	14.2	0.6	Small increase	Negligible
21-3 (24 Watling Street)	18.3	14.6	15.1	0.5	Small increase	Negligible
21-4 (22 Flats Lane)	18.0	14.3	15.0	0.7	Small increase	Negligible

<sup>13</sup> Environmental Protection UK (EPUK) (2010), *Development Control: Planning for Air Quality*.

Table 7: Summary of DMRB annual mean PM<sub>10</sub> results (construction phase)

Receptor	Concentrations (µg/m <sup>3</sup> )			Change in concentrations (µg/m <sup>3</sup> )	Magnitude of change	Impact descriptor
	2012 baseline	2017 without Proposed Scheme	2017 with Proposed Scheme			
21-1 (Draytonlane End Farm)	17.0	16.1	15.8	-0.3	Imperceptible	Negligible
21-2 (The Lodge)	16.3	15.6	15.6	0.0	Imperceptible	Negligible
21-3 (24 Watling Street)	17.0	16.2	16.2	0.0	Imperceptible	Negligible
21-4 (22 Flats Lane)	17.0	16.1	16.2	0.1	Imperceptible	Negligible

- 5.2.6 Annual mean NO<sub>2</sub> and PM<sub>10</sub> concentrations will be below the air quality standards both with and without the Proposed Scheme for the construction phase. The hourly mean NO<sub>2</sub> air quality standard will also be met as annual mean NO<sub>2</sub> concentrations will be well below 60µg/m<sup>3</sup>. In addition the daily mean PM<sub>10</sub> air quality standard will also be met. It is not possible to model PM<sub>2.5</sub> using the DMRB screening model, but given the PM<sub>10</sub> concentrations, the annual mean PM<sub>2.5</sub> concentrations will be below the air quality standard.
- 5.2.7 Changes in modelled concentrations with and without the Proposed Scheme have been calculated to determine the impact to local air quality. For NO<sub>2</sub> there will be a small decrease in concentrations at Draytonlane End Farm due to the temporary realignment of the A453 Sutton Road further away from the receptor. At The Lodge, 24 Watling Street and 22 Flats Lane there will be a small increase in NO<sub>2</sub> concentrations due to increases in traffic on Watling Street and the A5 as a result of construction traffic movements. The change in PM<sub>10</sub> concentrations is imperceptible at all receptors.
- 5.2.8 The magnitude of impact for NO<sub>2</sub> will be negligible for all receptors as the change in concentrations is small and concentrations are well below air quality standards. For PM<sub>10</sub> the magnitude of impact will be negligible for all receptors assessed as the change in concentrations is imperceptible and concentrations are well below air quality standards.
- 5.2.9 In certain instances additional qualitative assessment has been undertaken. This was the case for the A5 between the junction with the A38 and M6 Toll junction T5 and the A38 between A5 and A5148, which were identified as meeting the criteria for assessment due to increases in construction traffic. The qualitative assessment concluded that the magnitude of impact for NO<sub>2</sub> and PM<sub>10</sub> is expected to be negligible at receptors along the A5 and A38. The expected magnitude of impact has been determined on the basis of the magnitude of construction traffic increases, the baseline air quality is below air quality standards, the distance to the receptors from the roads and the existing traffic flows on the construction traffic routes.

### Assessment of significance

- 5.2.10 Considering the significance of the air quality impacts according to the criteria set in the EPUK methodology<sup>13</sup>, the following points are noted:
- the magnitude of impact is negligible for NO<sub>2</sub> and PM<sub>10</sub> at receptors;

- pollutant concentrations are well below the air quality standards for both NO<sub>2</sub> and PM<sub>10</sub> with and without the Proposed Scheme.

5.2.11 Based on the above, the effect on air quality due to construction traffic emission will not be significant

## 5.3 Operational traffic model

5.3.1 Operational traffic data used in this assessment are detailed in Volume 5: Appendix TR-001-000. The operational scenario used traffic data from the first year of opening of the Proposed Scheme (2026).

5.3.2 Screening using the DMRB traffic and road alignment change criteria was undertaken to determine locations requiring quantitative assessment. One location within the Drayton Bassett, Hints and Weeford area met the criteria for an assessment of emissions from traffic during the operational stage, following completion of the Proposed Scheme. This location is Flats Lane, due to permanent realignment of Flats Lane.

### Receptors assessed

5.3.3 For locations where DMRB traffic and road alignment change criteria for local air quality were met, a number of receptors representative of worst-case exposure locations were selected for assessment. These included locations representative of highest concentrations along the roads, including closest to junctions or to the road itself. Receptors assessed are listed in Table 8 and shown in Volume 5: Map AQ-01-021.

Table 8: Modelled receptors (operational phase)

Receptor	Description/Location	Ordnance Survey coordinates
21-5	10 Flats Lane, Lichfield	414490,304752

### Background concentrations

5.3.4 The background concentrations used in the assessment are shown in Table 9 taken from the Defra maps.

Table 9: Background 2026 concentrations at assessed receptors

Receptor (or zone of receptors)	Concentrations (µg/m <sup>3</sup> )		
	NO <sub>x</sub>	NO <sub>2</sub>	PM <sub>10</sub>
21-5 (10 Flats Lane)	13.9	10.2	15.3

### DMRB model results

5.3.5 This section provides the summary of the modelled pollutant concentrations for the assessed receptors. The magnitude of change and impact descriptor are also derived following the Environmental Protection UK (EPUK) methodology<sup>13</sup>.



Table 10: Summary of DMRB annual mean NO<sub>2</sub> results (operational phase)

Receptor	Concentrations (µg/m <sup>3</sup> )		Change in concentrations (µg/m <sup>3</sup> )	Magnitude of change	Impact descriptor
	2026 without Proposed Scheme	2026 with Proposed Scheme			
21-5 (10 Flats Lane)	10.5	10.5	0.0	Imperceptible	Negligible

Table 11: Summary of DMRB annual mean PM<sub>10</sub> results (operational phase)

Receptor	Concentrations (µg/m <sup>3</sup> )		Change in concentrations (µg/m <sup>3</sup> )	Magnitude of change	Impact descriptor
	2026 without Proposed Scheme	2026 with Proposed Scheme			
21-5 (10 Flats Lane)	15.4	15.4	0.0	Imperceptible	Negligible

5.3.6 Annual mean NO<sub>2</sub> and PM<sub>10</sub> concentrations will be below the air quality standards both with and without the Proposed Scheme for the operation phase. The hourly mean NO<sub>2</sub> air quality standard will also be met as annual mean NO<sub>2</sub> concentrations will be well below 60µg/m<sup>3</sup>. In addition the daily mean PM<sub>10</sub> air quality standard will also be met. It is not possible to model PM<sub>2.5</sub> using the DMRB screening model, but given the PM<sub>10</sub> concentrations, the annual mean PM<sub>2.5</sub> concentrations will be below the air quality standard.

5.3.7 Changes in modelled concentrations with and without the Proposed Scheme have been calculated to determine the impact to local air quality. The change in NO<sub>2</sub> and PM<sub>10</sub> concentrations is imperceptible at the receptor.

### Assessment of significance

5.3.8 Considering the significance of the air quality impacts according to the criteria set in the EPUK methodology<sup>13</sup>, the following points are noted:

- the magnitude of impact is negligible for NO<sub>2</sub> and PM<sub>10</sub> at the receptor; and
- pollutant concentrations are well below the air quality standards for both NO<sub>2</sub> and PM<sub>10</sub> with and without the Proposed Scheme.

5.3.9 Based on the above, the effect on air quality due to operational traffic emissions will not be significant.

## 6 References

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